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VOLUME 1. JULY-SEPTEMBER, 1926 NUMBER 3.

JOURNAL

OF THE

Pan-Pacific Research Institution

A Periodical Record of Investigations Bearing on Problems of Food Production, Distribution, Conservation and Consumption, as well as on Public Health, and Race and Population Problems as Related to the Countries Bordering on the Pacific.

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University of Hawaii
The Pan-Pacific Research Institution.

PUBLISHED QUARTERLY AT HONOLULU, HAWAII
BY THE
PAN-PACIFIC UNION

Institutions for Research Work in the Territory of Hawaii

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EDITORIAL NOTE

This is the second of a series of papers giving a description of the Institutes for Research Work in the Interests of Agriculture and Food Production in Pacific Lands. The first, prepared by Dr. P. J. S. Cramer, of Java, in accord with a resolution passed at the Pan-Pacific Food Conservation Conference, was published in the last number of the Journal. It is proposed in time to secure and publish kindred information regarding each Pacific country, and it is the hope of the editors that contributions along this line will be received from those interested.

This issue is devoted to what is believed to be a complete list of the scientific agencies now functioning in the Territory of Hawaii. Although the majority of these are governmental, some of the privately endowed organizations antedate the existence of the present Federal and Territorial governments in these islands.

THE QUEEN'S HOSPITAL

The Queen's Hospital of Honolulu was founded by Her Majesty Queen Emma sixty-six years ago.

The Queen's Hospital accommodates 300 patients; it is listed in Section 1 of American hospitals. The hospital is composed of the following departments: Emergency Service, Maternity Department, Surgical Department, X-ray, equipped for taking all types of diagnostic X-ray photos, and for ordinary X-ray therapy; Laboratory Department, 11,252 tests were performed during 1925; Doctors' clinics, meetings once a week, open to all doctors; Dietary Department; Training School for Nurses, with Hawaiian, Caucasian, Chinese, Japanese, Korean, and Portuguese students; Social Service, Physiotherapy.

THE STAFF

The Visiting Hospital Staff of the Queen's Hospital is as follows:

Surgeons:
Geo. F. Straub, M.D.; R. W. Benz, M.D.; J. R. Judd, M.D.; A. K. Hanchett, M.D.

Physicians:
C. A. Saunders, M.D.; O. A. Jeffreys, M.D.; H. L. Arnold, M.D.; I. J. Shepherd, M.D.

Oculists, Aurists and Diseases of Nose and Throat:
R. H. Hagood, M.D.; G. M. Van Poole, M.D.

Obstetrics:
A. G. Hodgins, M.D.; H. H. Blodgett, M.D.

Physio Therapy and Fractures:
P. Withington, M.D.; E. C. Fronk, M.D.

Psychiatry:
A. B. Eckerdt, M.D.; R. B. Faus, M.D.

Dermatology:
F. L. Putman, M.D.; J. T. Wayson, M.D.

Gynecology:
G. C. Milnor, M.D.

Genito-Urinary:
R. O. Brown, M.D.

Roentgenology:
A. G. C. Schnack, M.D.

The Executive Staff is as follows:
Geo. C. Potter, Superintendent; Nils P. Larsen, B.Sc., M.D., Medical Director and Pathologist; J. E. Jensen, M.D., E. M. Howarth, M.D., H. C. Gessner, M.D., Douglas Bell, M.D., Internes; A. G. C. Schnack, A.B., M.D., Roentgenologist; Miss Harriet B. Delamere, R.N., Supt. of Nurses; Miss Hortense Jackson, R.N., Instructress of Nurses; Arthur Noble, Pharmacist; Mrs. C. H. Johnson, B.S., Dietitian; E. J. Rego, Cashier; Mrs. Margaret Coleman, Housekeeper; Mrs. A. S. Godwin, Asst. Housekeeper.

UNITED STATES DEPARTMENT OF COMMERCE

19th Lighthouse District, R. R. Tinkham, Supt. in charge.

Chief clerk, Theodore Te Grootenhuis.

Magnetic Observatory, H. E. McComb in charge.

Inspector of Steam Vessels, Inspector of hulls, Capt. R. T. Bain; inspector of boilers, C. J. MacDonald.

UNITED STATES GEOLOGICAL SURVEY

Water Resources Branch, M. H. Carson, district engineer.

Topographic Branch, A. O. Burkland, district engineer.

UNITED STATES PUBLIC HEALTH SERVICE

E. A. Sweet, surgeon, chief quarantine officer.

Passed asst. surgeons, L. W. Tucker and L. C. Scully; acting asst. surgeons, W. F. James and J. S. B. Pratt.

Hawaii: Hilo, acting asst. surgeon, L. L. Sexton; Mahukona, acting asst. surgeon, R. T. Treadwell.

Maui: Wailuku, acting asst. surgeon, Wm. Osmers; Lahaina, acting asst. surgeon, George Webb.

Kauai: Makaweli, acting asst. surgeon, A. H. Waterhouse; Ahukini, J. M. Kuhns.

Leprosy Investigation Station, surgeons, M. H. Neill and R. P. Sandige.

U. S. BUREAU OF ENTOMOLOGY

Field Station investigating Mediterranean Fruit Fly, H. F. Willard, entomologist, in charge.

The Bureau of Entomology founded this laboratory in 1912 in charge of Dr. E. A. Back, for the investigation of the Mediterranean fruit fly, first noticed in these islands in 1910. The function of the laboratory is the investigation of the fruit and melon flies and of their parasites. In addition an inspection service is maintained in connection with the issuance of permits for the shipment of certain fruits to the Pacific Coast.

The organization is as follows:
H. F. Willard, entomologist in charge.
A. C. Mason, assistant entomologist.
E. I. Banks, inspector.
Ah Fook, inspector.

Among the publications issued by the laboratory are the following:

"The Melon Fly in Hawaii," by E. A. Back and C. E. Pemberton, U. S. D. A. Bul. 491.

"The Mediterranean Fruit Fly in Hawaii," by E. A. Back and C. E. Pemberton.

"A Contribution to the Biology of Fruit Fly Parasites in Hawaii," by C. E. Pemberton and H. F. Willard. Journ. Agr. Research, XV., No. 8.

"Interrelations of Fruit Fly Parasites in Hawaii," by C. E. Pemberton and H. F. Willard, Journ. Agr. Research, XII, No. 5.

In addition a summary giving the status of the fruit flies and their parasites is issued periodically.

HAWAIIAN SECTION, U. S. WEATHER BUREAU

Central Office: Honolulu, T. H., Established in 1898.

E. A. Beals, Official in Charge.

E. F. Loveridge.

C. A. Cole.

Rainfall observations are made at about 220 stations and published monthly, and summarized in an annual publication.

About 60 stations keep a record of temperature and these data are incorporated with the rainfall observations in the same publications.

Observations of pressure, sunshine, humidity, and wind velocity and direction are made at the Honolulu station and at a very few other places in the Hawaiian Islands.

The influence of the weather on crops, especially the sugar crop, as obtained from about 25 reporters, is published weekly.

One of the most important branches of the Hawaiian Meteorological Service is the Marine work, which consists of supplying every vessel visiting Honolulu with blanks upon which a record of the weather is kept at sea. Besides the keeping of the weather record, a large number of vessels report weather conditions once or twice a day by radio. The reports thus received are used in making a forecast of winds affecting shipping going in all directions from Honolulu. The forecast is broadcast by the U. S. Naval Communication Service once each day at noon, local time, for the benefit of mariners.

All Weather Bureau publications are furnished free to those wishing them.

TERRITORIAL BOARD OF HEALTH

Dr. F. E. Trotter, President.

Mae R. Weir, secretary.

Members—John D. McVeigh, D. S. Bowman, Dr. C. B. Cooper, Wm. B. Lymer, G. P. Denison and Joseph Ordenstein.

Sanitary engineer, S. W. Tay; chief sanitary inspector, A. K. Arnold; registrar general, M. H. Lemon; food commissioner and analyst, M. B. Bairos; bacteriologist, A. N. Sinclair. Hawaii: Hilo, chief sanitary inspector, Clifford Charlock; dep. chief sanitary inspector, S. A. Smith; Maui, chief sanitary inspector, R. C. Lane; Kauai, A. P. Christian.

Superintendent Insane Asylum, A. E. Eckerdt.

Kalihi Hospital, Mrs. Bessie Clinton, supt.

Kalihi Quarantine Hospital, Shea Chan, keeper.

Leper Settlement—Superintendent, R. L. Cooke; resident physician, A. B. Potter.

Government physicians—Hawaii: North Hamakua, W. A. Christensen; East of South Hilo, L. L. Sexton; West of South Hilo, Thomas Keay; North Hilo, W. D. Whitman; Puna, Frederick Irwin; Kau, G. L. Broadrup. North and South Kona, H. S. Dickson; North Kohala, R. F. Treadwell; South Kohala and Hamakua, C. L. Carter. Kauai: Waimea, G. B. Tuttle; Lihue, J. M. Kuhns; Hanalei, V. A. Harl; Koloa, A. H. Waterhouse; Kawaihau, A. W. Boyden; Oahu: Aiea, H. B. Cooper; Ewa, R. J. Mermod; Waianae, C. R. McLean; Waialua, Hubert Wood; Koolauloa, Claude Buffet; Koolaupoko, C. F. Reppun. Maui: Lahaina, George Webb; Lower Makawao, A. C. Rothrock; Upper Makawao and Kula, F. G. Edwards; Wailuku, Wm. Osmers; Kahului, G. Lightner; Kihei and Puunene, Peter Mjedloff; Haiku, F. A. St. Sure; Hana, B. H. Pratt; Leeward Molokai, E. S. Goodhue; Lanai, R. J. Wilkinson.

CIVIL SERVICE COMMISSION FOR THE CLASSIFIED SERVICE OF THE BOARD OF HEALTH

Mrs. G. T. Lomnes, T. E. Wall, Dr. A. K. Hanchett.

BERNICE P. BISHOP MUSEUM

By HERBERT E. GREGORY, Director

Bernice P. Bishop Museum was founded in 1889 by Charles R. Bishop as a personal memorial to the Princess Pauahi, last of the Kamehameha family of the Chiefs of Hawaii. In 1896 the institution was organized by the selection of a Board of Trustees and provided with an endowment for conducting researches in "Polynesia and kindred antiquities, ethnology, and natural history." The work of the Museum is in two fields:

1. The collection of materials from Pacific waters and islands, and making them available for students.
2. Original investigations in anthropology, botany, zoology, and geology.

Because of their urgency, problems in ethnology, malacology, systematic botany, and entomology are at present receiving chief attention. Field work is carried on by parties stationed at various places in Polynesia, Micronesia, and Melanesia and by use of exploring ships furnished by individuals and by the U. S. Navy.

To prevent duplication of funds and personnel, the Museum has established scientific and financial relations with the American Museum of Natural History, Yale University, The National Research Council, The Philadelphia Academy of Sciences, The University of Hawaii, the Hawaiian Sugar Planters' Experiment Station, and to a less degree with other institutions interested in Pacific studies.

Scientists desiring to carry on investigations at the Museum have use of laboratories, collections, and a library which includes about twelve thousand volumes relating to Pacific subjects.

The publications of the Museum are: Memoirs, vols. I-IX (1899-) Occasional Papers, vols. I-VIII (1898-1923); Bulletins, Nos. 1-29 (1922-); Special Publications, Nos. 1-10 (1892-); papers in preparation, 32. The most numerous publications are in ethnology; followed in turn by zoology, botany, and geography. As of January, 1926, the Museum staff was as follows:

Herbert E. Gregory, Ph.D., Director.
Elmer D. Merrill, M.S., Consulting Botanist.
Otto H. Swezey, M. S., Consulting Entomologist.
Clark Wissler, Ph.D., Consulting Anthropologist.
Stanley C. Ball, Ph.D., Curator of Collections.
Forest B. H. Brown, Ph.D., Botanist.
Elizabeth Wuist Brown, Ph.D., Botanist.
Edwin H. Bryan, M.S., Entomologist.
C. Montague Cooke, Jr., Malacologist.
Theodore T. Dranga, Travelling Collector.
Charles H. Edmondson, Ph.D., Zoologist.
Kenneth P. Emory, M.A., Ethnologist.
E. S. Craighill Handy, Ph.D., Ethnologist.
Willowdean Chatterson Handy, Ph.B., Ethnologist.
Elizabeth B. Higgins, Librarian.
Te Rangi Hiroa (P. H. Buck), M.D., Ethnologist.
Hans G. Hornbostel, Travelling Collector.
J. F. Illingworth, Ph.D., Entomologist.
Stella M. Jones, Executive Secretary.
Margaret Mead, Ph.D., Ethnologist.
George C. Munro, Ornithologist.
Marie C. Neal, M.A., Malacologist.
John F. G. Stokes, Ethnologist.
Thomas G. Thrum, Ethnologist.
Lahilahi Webb, Guide to Exhibits.
Gerrit P. Wilder, Botanist.
Anna Ho, Guide to Exhibits.

Associated each year with the Museum as Bishop Museum fellows, are advanced students and professional scientists. Those for 1925 and 1926 include:

Erling Christophersen, Ph.D., Royal Frederic. Univ., Norway; botany.
A. R. Davis, Ph.D., University of California; botany.
Carey D. Miller, M.S., University of Hawaii; botany.
John B. Stone, B.A., Yale University; botany.
Harry S. Ladd, Ph.D., University of Iowa; geology.
Patrick Marshall, M.A., University of Otago, geology.
Chester K. Wentworth, Ph.D., University of Virginia; geology.
W. C. McKern, A.B., Milwaukee Museum; ethnology.
E. W. Gifford, University of California; ethnology.
Carl Skottsberg, Ph.D., Botanical Garden, Sweden; botany.
N. E. A. Hinds, A.B., University of California; geology.
Henry W. Fowler, Philadelphia Academy of Science; zoology.
Harry Shapiro, A.B., Harvard University; ethnology.
J. E. Hoffmeister, A.B., United States Natural Museum; zoology.

HAWAIIAN AGRICULTURAL (FEDERAL) EXPERIMENT STATION, HONOLULU, HAWAII.

By J. M. WESTGATE, Director.

The underlying policy of the Hawaiian Agricultural Experiment Station is the solution of the problems which arise in connection with the diversification of the agricultural industries of the Hawaiian Islands. This policy has been consistently followed ever since its establishment in 1901. The work of the Station is carried out by several divisions, e.g., horticultural, agronomy, chemistry and extension. The horticultural division devotes its attention to the development and culture of improved varieties of tropical and subtropical fruits as well as developing practicable methods of vegetative propagation of those species not adapted to propagation by seeds. The agronomy division devotes its attention to the introduction and development of improved field crops such as corn, coarse fodders, pasture grasses and root crops including vegetables. The chemistry division deals with the fertilizer and other chemical problems arising in connection with the various diversified crops. At present its activities are mainly centered around the problems arising in connection with the establishment of the edible canna as a starch producing crop for commercial purposes. The extension division endeavors to bring home to the farmer the practical results of the experiments performed by the various experiment stations. Planting material of improved strains of fruits, vegetables and field crops is distributed to selected farmers throughout the Islands. Since the establishment of the Station over a hundred projects have been undertaken, the principal results of which are indicated in the published bulletins of the Station, as follows:

*Supply Exhausted.

STATION BULLETINS

*1. Chickens and Their Diseases in Hawaii.
*2. The Root Rot of Taro.
*3. Insecticides for Use in Hawaii.
*4. The Cultivation of Sisal.
*5. The Sugar-Cane Leaf-Hopper in Hawaii.
*6. Mosquitoes in Hawaii.
*7. The Banana in Hawaii.
*8. Methods of Milking.
9. Citrus Fruits in Hawaii.
*10. Insect Enemies of Tobacco in Hawaii.
*11. The Black Wattle in Hawaii.
12. The Mango in Hawaii.
*13. The Composition of Some Hawaiian Feeding Stuffs.
*14. Marketing Hawaiian Fruits.
*15. Cultivation of Tobacco in Hawaii.
16. The Ceara Rubber Tree in Hawaii.
*17. Hawaiian Honeys.
*18. Insects of Cotton in Hawaii.
19. Experiments in Tapping Ceara Rubber Trees.
*20. Shield Budding the Mango.
21. A Study of the Composition of the Rice Plant.
*22. Insects Attacking the Sweet Potato in Hawaii.
23. Leguminous Crops for Hawaii.
24. Assimilation of Nitrogen by Rice.
25. The Avocado in Hawaii.
26. The Function and Distribution of Manganese in Plant and Soils.
27. Insects Injurious to Corn.
28. The Effect of Manganese on Pineapple Plants and the Ripening of the Pineapple Fruit.
*29. Ornamental Hibiscus in Hawaii.
30. The Effect of Heat on Hawaiian Soils.
31. Rice Soils in Hawaii.
32. The Papaya in Hawaii.
33. The Organic Nitrogen of Hawaiian Soils.
34. Tobacco Insects in Hawaii.
35. Absorption of Fertilizer Salts by Hawaiian Soils.
36. Grasses and Forage Plants of Hawaii.
37. Ammonification and Nitrification in Hawaiian Soils.
38. Effect of Fertilizers on the Physical Properties of Hawaiian Soils.
39. The Biochemical Decomposition of Nitrogenous Substances in Soils.
40. The Soils of the Hawaiian Islands.
41. Phosphate Fertilizers for Hawaiian Soils, and Their Availability.
42. Composition of Hawaiian Soil Particles.
43. Chemical Studies of the Efficiency of Legumes as Green Manures.
44. The Litchi in Hawaii.
45. Potato Diseases in Hawaii and Their Control.
46. The Pigeon Pea (Cajanus Indicus): Its Culture and Utilization in Hawaii.
47. Application of the Principles of Jelly Making to Hawaiian Fruits.
48. Swine Raising in Hawaii.
49. Acid Lime Fruit in Hawaii.
50. Sweet Potato in Hawaii.
51. The Guatemalan Avocado in Hawaii.
52. Manganese Chlorosis of Pineapples: Its Cause and Control.

53. The Hawaiian Tree Fern as a Commercial Source of Starch.
54. Edible Canna in Hawaii.

PRESS BULLETINS

*1. The Function of the Experiment Station.
*2. The Castor Bean.
*3. Preliminary Experiments with the "Quick Blight" of the Potato.
*4. "Na Hoao No Ke Pale Ana I Ka Pala O Ke Kalo," and other short articles in Hawaiian.
*5. Manila Hemp or Abaca.
*6. Vanilla Cultivation in Hawaii.
*7. Mosquitoes. (Rules for individuals to rid themselves of the pest.)
*8. The Mealy Bug or "Pear Blight" of the Alligator Pear.
*9. Two Plant Diseases in Hawaii: The Pineapple Disease of Sugar Cane and The Brown-Eyed Disease of Coffee.
*10. The Pineapple Scale.
*11. The Common Liver Fluke in Hawaii.
*12. Tobacco Experiments in Hamakua, Hawaii.
*13. Rubber in Hawaii.
*14. Fuller's Rose Beetle.
*15. Lime an Essential Factor in Forage.
*16. The Avocado Mealy-Bug.
*17. The Mango Weevil.
*18. All About the Hawaii Experiment Station.
19. A Preliminary Report on Rice Investigations.
*20. Introduction of Top-Minnows into the Hawaiian Islands.
*21. Fruit Marketing Investigations in 1907.
*22. Pineapple Shipping Experiments in 1908.
23. The Influence of Manganese on the Growth of Pineapple.
24. A Preliminary Report on Cotton Experiments.
25. Carbon Bisulphid for Killing Weeds.
*26. The Algaroba in Hawaii.
27. The Use of Insecticides in Hawaii.
*28. Peanuts in Hawaii.
*29. The Management of Pineapple Soils.
*30. Killing Weeds With Arsenite of Soda.
31. Brief Instructions for Farm Butter Makers.
32. Cultural Methods for Controlling the Cotton Boll Worm.
33. A Study of Humus in Hawaiian Soils.
34. Cotton in Hawaii.
35. Sisal and the Utilization of Sisal Waste.
*36. The Pineapple in Hawaii.
*37. Euphorbia Lorifolia, A Possible Source of Rubber and Chicle.
38. The Use of Dynamite in Farming.
39. The Extraction and Use of Kukui Oil.
40. Silos, Silage and Silage Crops for Hawaii.
41. Tin Cans Vs. Pots for Seedling Plants.
42. Corn Culture and Improvement.
43. Eye Worm of Chickens.
44. Plantation Rubber in Hawaii.
45. An Experiment in Marketing under Territorial Auspices.
46. Poultry Management.
47. Cold Storage for Tropical Fruits.
48. Suppression of Weeds Among Pineapples by Arsenite of Soda Spray.
49. A Cheap and Effective Home-made Plank Drag.
50. The Effect of Arsenite of Soda on the Soil.
51. The Spraying of Yellow Pineapple Plants on Manganese Soils with Iron Sulphate Solutions.
52. Comparative Value of Legumes as Green Manures.
53. Composition and Digestibility of Feeding Stuffs Grown in Hawaii.
54. Preliminary Report on Root Rot in Hawaii, (Lahaina Cane Deterioration, Pineapple Wilt, Taro Rot, Rice Root Rot, Banana Root Rot.)

EXTENSION BULLETINS

1. Extension Notes—I (Sore-head in Chickens, Lessons from the County Fairs, The Farmer as a Business Man, Co-operation among Farmers—I, A Superior Sweet Potato).
2. Extension Notes—II (Local Care of Roads, Ridding Cows of Flies, The Mongoose, Balanced Rations for Livestock in Hawaii, Cooperation—II).
3. Field Production of Beans.
4. Methods of Combating Garden Pests.
5. Peanuts—How to Grow and Use Them.
6. The Banana as an Emergency Food Crop.
7. Drying as a Method of Food Preservation in Hawaii.
8. Bean Spot Disease.
9. Hawaiian Vegetables and Their Function in the Diet.

MISCELLANEOUS PUBLICATIONS

Annual Reports:

1901 to 1924 inclusive. In addition to routine matters, the Annual Reports previous to 1923 give attention to numerous miscellaneous subjects in connection with the various projects under way at the time.

Reprint:

Economic Sea Weeds of Hawaii and Their Food Value. (1906.)

Summary of Work:

Some Worth-While Accomplishments of the Hawaii Agricultural Experiment Station, 1901-1923.

Special Bulletins:

A Cultura da Uva (Grape). Printed in Portuguese.

A Cultura da Banana. Printed in Portuguese.

*The Production and Inspection of Milk.

*The Grazing Industry. (1911.)

No Ka Hooulu Ana I Ke Kalo. (Taro) Printed in Hawaiian. (1911.)

Indexes:

Index to Publications of the Hawaii Agricultural Experiment Station, July 1, 1901 to December 31, 1911.

Index to Publications of the Hawaii Agricultural Experiment Station 1912 to 1923. (In press.)

CURRENT PROJECTS UNDER WAY

Horticulture:

37-N Plant introductions, distribution and cultural requirements of tropical fruits.

37-O Investigations of methods of propagation of tropical and sub-tropical fruits.

37-P A study of varieties and habits of pollination of the avocado, papaya, banana and tomato.

Agronomy:

38-H Investigations as to relative merits of various pasture and soiling grasses and legumes for animals, especially dairy cows.

38-I Investigation of the relative merits of various root crops as human food, stock feed, and for commercial starch production.

38-J A study of Oriental Vegetables in Hawaii.

38-K Ginger culture in Hawaii.

38-L Mendelian Studies with Guam corn hybrids.

38-M Lettuce breeding.

38-N Variety and cultural experiments with farm crops on the island of Maui.

Chemistry:

39-H Investigation regarding edible canna (*Canna edulis*) and other crops as commercial sources of starch under tropical conditions.

39-M A study of Oriental vegetables in Hawaii. Cooperative experiment with Agronomy Division.

39-K A study of the effect of climate and soil on the composition of vegetables.

Extension:

40-A Extension Agent Activities on Hawaii. To assist farmers in production and marketing.

41-A to 41-I Boys' and Girls' Clubs as follows: Canning, Swine, Rabbit, Poultry, Garden, Cooking, Sewing, Sweet Potato.

The Station is under the supervision of the Office of Experiment Stations, United States Department of Agriculture, and the following constitute the local staff at Honolulu, Hawaii:

J. M. Westgate, Director.
W. T. Pope, Horticulturist.
H. L. Chung, Agronomist.
J. C. Ripperton, Chemist.
R. A. Goff, In Charge of Glenwood Substation and Extension Agent for Island of Hawaii. Address, Hilo, Hawaii.
Mabel Greene, Boys' and Girls' Club Leader.
R. K. Lum, Junior Tropical Agronomist.

THE HAWAIIAN SUGAR PLANTERS' EXPERIMENT STATION.

By H. P. Agee, Director.

The Experiment Station of the Hawaiian Sugar Planters' Association is a private institution supported by the plantation membership of that Association. It was founded in 1895 as a small organization which has gradually developed to an institution of six departments, briefly described as follows:

1. The Entomology Department which deals with the control of the insect pests of sugar cane, usually by the methods of introducing enemies of these pests which prey upon them.

2. A Pathology Department which studies the diseases to which the sugar cane plant is subject and cooperates with the other branches in the control of these diseases.

3. An Agricultural Department which deals with the propagation of new cane varieties and studies methods of cultivation.

4. A Forestry Department which cooperates with the government forestry officials in the preservation and improvement of the watersheds upon which the plantations are dependent.

5. A Sugar Technology Department which deals with the chemical control of the sugar factories and cooperates with the factory operators in improving factory operation.

6. A Chemistry Department which conducts investigations with the view of placing before the plantations information which will give a better understanding of the chemistry of soils in its relation to fertilization and cultural practices generally.

The Staff handling the above work is of the following personnel:

H. P. Agee, Director.
R. C. L. Perkins, Consulting Entomologist.
Otto H. Swezey, Entomologist.
F. Muir, Entomologist.
C. E. Pemberton, Associate Entomologist.
F. X. Williams, Assistant Entomologist
R. H. Van Zwaluwenburg, Assistant Entomologist.
F. C. Hadden, Assistant Entomologist.
Gertrude Henderson, Assistant Entomologist.
H. L. Lyon, Botany and Forestry, in charge.

Geo. A. McEldowney, Forest Supervisor, Oahu Project.
L. W. Bryan, Forest Supervisor, Hilo Project.
Joseph E. Wist, Supt. Vineyard St. Nursery.
Albert Duvel, Forest Supervisor, Kauai Project.
W. R. McAllep, Sugar Technologist.
W. L. McCleery, Associate Sugar Technologist.
Walter E. Smith, Assistant Sugar Technologist.
A. Brodie, Technical Chemist.
H. A. Cook, Assistant Chemist.
Reginald H. King, Assistant Chemist.
H. F. Bomonti, Assistant Chemist.
Guy R. Stewart, Chemist.
Fred Hansson, Assistant Chemist.
C. L. Crutchfield, Assistant Chemist.
F. Ray Van Brocklin, Assistant Chemist.
J. A. Verret, Agriculturist.
Y. Kutsunai, Assistant Agriculturist.
H. K. Stender, Assistant Agriculturist.
Raymond Conant, Assistant Agriculturist.
F. C. Denison, Assistant Agriculturist.
Allister Forbes, Assistant Agriculturist.
J. A. H. Wilder, Assistant Agriculturist.
A. J. Watt, Jr., Assistant Agriculturist.
Douglas A. Cooke, Assistant Agriculturist.
Dean F. Palmer, Assistant Agriculturist.
David M. L. Forbes, Assistant Agriculturist.
Royden Bryan, Assistant Agriculturist.
H. Atherton Lee, Pathologist.
J. P. Martin, Assistant Pathologist.
Clyde C. Barnum, Assistant Pathologist.
D. M. Weller, Histologist.
Twigg Smith, Illustrator.

BOARD OF COMMISSIONERS OF AGRICULTURE AND FORESTRY.

By C. S. Judd, Superintendent

This department of the government of the Territory of Hawaii was organized in 1903, to take charge of forestry, entomology, plant inspection and later, animal industry work, in the Territory.

It is governed by five Commissioners, appointed by the Governor, who serve without pay and one of whom is designated as President. An Executive Officer appointed by the Commissioners does the secretarial work for the Board.

The duties of the Board are:

1. To gather and publish information and statistics concerning forestry, entomology and plant pathology, and domestic animals and to maintain a library on such subjects.
2. To cooperate with other organizations doing similar work, avoiding duplication.
3. To make rules and regulations, subject to the approval of the Governor, to secure protection against insect pests and diseases, protection and care of the forests, and protection against animal diseases.
4. To appoint the necessary officers.
5. To have charge of forest reservations and to prevent control and extinguish forest fires.

Commissioner and President—G. I. Brown.
Commissioners—H. M. Von Holt, A. H. Rice, G. G. Fuller, H. P. Agee.
Publications—Biennial reports and quarterly, "The Hawaiian Forester and Agriculturist."

1. DIVISION OF FORESTRY

Superintendent .....C. S. Judd
Assistant Superintendent .....T. C. Zschokke
Assistant Forester .....L. W. Bryan
Forest Nurseryman .....David Haughs
Forest Rangers....Eleven and force of laborers

1. Four forest nurseries, one on each of the following islands: Kauai, Oahu, Maui, and Hawaii, are conducted for the propagation and distribution of trees and other plants, including new plants which will be valuable additions to the native flora.
2. Botanic Gardens at office of Board and in Makiki Valley, Honolulu.
3. Numerous plantings of trees on various sites throughout the islands to determine their value for further use in planting.
4. Plantation of three species of chaulmoogra trees at Waiahole, Island of Oahu.
5. Forest reserves on the five main islands, numbering 53 and embracing a total of 883,877 acres, of which 588,869 are owned by the government. These contain water-conserving forests.
6. The most important project of this Division is the rejuvenation and extension of the depleted native forest on watershed areas in order to increase its water-conserving ability to the highest degree.

Publications:
"Eucalyptus Culture in Hawaii," L. Margolin.
"Instructions for Propagating Forest, Shade and Ornamental Trees," D. Haughs.
"Forestry as Applied in Hawaii," C. S. Judd.
"New and Noteworthy Hawaiian Plants," J. F. Rock.
"List of Hawaiian Names of Plants," J. F. Rock.
"The Sandalwoods of Hawaii," J. F. Rock.
"The Ohia Lehua Trees of Hawaii," J. F. Rock.
"The Arborescent Indigenous Legumes of Hawaii," J. F. Rock.
"The Hawaiian Genus Kokia, A Relative of the Cotton," J. F. Rock.
Biennial reports of the Division.
Various reports and articles printed in "The Hawaiian Forester and Agriculturist."

2. DIVISION OF ENTOMOLOGY

Entomologist: D. T. Fullaway. Two assistants.

This Division has charge of all matters relating to the eradication or control of injurious insects and the introduction, breeding, colonizing and distribution of beneficial insects. The latter work in-

volves expeditions to foreign countries.

It maintains a laboratory at the office of the Board and cooperates closely with the entomological staff of the Experiment Station, Hawaiian Sugar Planters' Association.

Past projects:

Introduction, colonization, and liberation of natural enemies of the leaf-hopper of sugar cane, Mediterranean fruit fly, corn leaf hopper, fern weevil, dung flies, scales, aphis, hornfly, cabbage butterfly, melonfly, mealy-bugs, enemies of the lantana plant and fungus on rose beetle. The introduction of caprifying insects associated with various species of fig trees (*Ficus* spp.), the study of insects infesting the pineapple plant to determine possibilities of control by natural and artificial agencies, and the study of army worm control and of the termites.

Present projects:

Investigation and introduction of enemies of the rose beetle (*Adoretus sinicus*).

Future projects:

Investigation of the enemies of fruit beetles and of termites.

This Division also gives advice and assistance to householders and farmers in the control of garden and field pests.

Publications:

"The Leaf-Hopper of the Sugar Cane," R. L. C. Perkins.

"Report of an Expedition to Africa in Search of the Natural Enemies of Fruit Flies," F. Silvestri.

"The Corn Leaf Hopper," D. T. Fullaway.

"The Circular of Information," J. Kotinsky.

"Mediterranean Fruit Fly (Ceratitis capitata)," E. M. Ehrhorn.

"The Fern Weevil," D. T. Fullaway.

"The Hive Bee," D. T. Fullaway.

Biennial reports of the Division. Various reports and articles printed in "The Hawaiian Forester and Agriculturist."

3. DIVISION OF PLANT INSPECTION

Chief Plant Inspector. E. M. Ehrhorn.

Assistants: L. W. Whitney, E. L. Caum, and five dock inspectors.

This Division has charge of all matters relating to the inspection, quarantine, fumigation, exclusion or destruction of all living plants, parts of plants, seeds, fruit, and other vegetable matter coming from outside ports and moving from Oahu to the other islands. It maintains a collection of insects and plants taken during inspection and of insects of foreign countries not yet established in the Territory. The inspection service extends to other island ports where outside vessels touch.

Publications:

Rules and regulations of the Division.

Biennial reports and various articles printed in "The Hawaiian Forester and Agriculturist."

4. DIVISION OF ANIMAL INDUSTRY

Territorial Veterinarian: P. H. Browning.

Assistant Territorial Veterinarian: L. E. Case.

Bacteriologist: B. A. Gallagher.

Livestock Inspector: Joseph Richard.

Deputy Territorial Veterinarians: H. E. Elliot, A. R. Rowat, J. C. Fitzgerald, A. R. Glaisyer, C. Golding.

This Division has charge of all matters relating to the inspection of imported animals and the prevention and eradication of contagious, infectious and communicable diseases among animals in the Territory.

It maintains animal quarantine stations at Honolulu, Hilo and Kahului where under its rules and regulations certain animals intended for importation undergo inspection and quarantine.

Past projects:

The investigation, control and eradication of glanders, anthrax, bovine tuberculosis, sore head, hog cholera, blackleg, contagious abortion, canine distemper, equine influenza and other animal diseases.

Present projects:

A vigorous campaign is constantly waged against bovine tuberculosis in which all dairy animals are tested at least twice a year and the reactors are condemned and destroyed.

A special study is being made of an obscure, fatal horse disease in a certain section of the Island of Maui.

Preventive measures are constantly being taken against the other diseases first mentioned above and, as they recur, they are investigated and controlled.

Publications:

"The Treatment and Prevention of Sore-Head, or Chicken Pox, by means of vaccination," V. A. Norgaard.

Rules and Regulations and biennial reports of the Division.

Various articles and reports published in "The Hawaiian Forester and Agriculturist."

UNIVERSITY OF HAWAII

A. L. DEAN, President
Organized July 1, 1920

As at present organized the University of Hawaii consists of the two undergraduate colleges—Applied Science and Arts and Sciences—a division of graduate study, and several related activities. The departments of instruction and their personnel are given below. The persons whose names are marked with an * are part time only. Where the titles are an insufficient indication of the field of work, this is shown in italics.

Agriculture:

L. A. Henke, M. S. (Wisconsin), Professor of Agriculture—*Animal Husbandry.*
F. G. Krauss, Sc. D. (Hawaii), Professor of Agronomy—*Agronomy, Genetics.*
J. O. Dale, B. S. (Missouri), Instructor in Poultry Husbandry.

Art:

M. E. Chipman, Professor of Ceramics and Design.
H. M. Luquiens,* B. S., B. F. A. (Yale), Instructor in Art.

Botany:

H. F. Bergman, Ph. D. (Minnesota), Professor of Botany—*Physiology, Ecology.*
Otto Degener, M. S. (Hawaii), Instructor in Botany—*Taxonomy.*

Chemistry:

F. T. Dillingham, M. A. (Yale), Professor of Chemistry—*Sugar, Agricultural Chemistry.*
Richard Wrenshall, Ph. D. (Yale), Professor of Chemistry—*Organic Chemistry.*
E. M. Bilger, Ph. D. (Yale), Assistant Professor of Chemistry—*Analytical and Physical Chemistry.*
G. Fujimoto, M. S. (Hawaii), Instructor in Chemistry.

Economics and Commerce:

Romanzo Adams, Ph. D. (Chicago), Professor of Economics and Sociology.
E. H. Van Winkle, B. S. (Harvard), Assistant Professor of Commerce—*Accounting.*
G. R. Kinnear, M. B. S. (Harvard), Assistant Professor of Commerce and University Treasurer.
C. G. Tilton, M. S. (California), Instructor in Commerce.

Education and Psychology:

T. M. Livesay, A. M. (Stanford), Professor of Education and Psychology.

Engineering:

A. R. Keller, C. E. (Cornell); S. M. C. E. Harvard); M. S. (M. I. T.), Professor of Civil Engineering and Dean of the College of Applied Science.
C. B. Andrews, M. S. and C. E. (Rose Polytechnic), Professor of Engineering.
J. M. Young,* M. E. and M. M. E. (Cornell), Professor of Engineering.
E. C. Webster, C. E. (Yale), Professor of Engineering and Mathematics.

English:

A. L. Andrews, Ph. D. (Cornell), Professor of English and Dean of the College of Arts and Science.
T. B. Hunt, M. A. (Princeton), Assistant Professor of English.
C. H. Neil, A. B. (So. Carolina), Assistant Professor of English.
L. V. Schwartz, Ph. D. (Stanford), Assistant Professor of English.
V. L. Kleinke, A. B. (Columbia), Instructor in English.
B. A. Tower, A. M. (Harvard), Instructor in English.

Entomology and Zoology:

D. L. Crawford, M. A. (Cornell), Professor of Entomology and Director of Extension.
C. H. Edmondson, Ph. D. (Iowa), Professor of Zoology and Director of Marine Laboratory.
E. H. Bryan,* M. S. (Hawaii), Instructor in Entomology.
J. M. Ostergaard, Assistant in Zoology.

Geology:

H. S. Palmer, Ph. D. (Yale), Professor of Geology.

History and Political Science:

K. C. Leebrick, Ph. D. (California), Professor of History.
O. E. Hooley, A. M. (Wisconsin), Instructor in History.
R. S. Kuykendall,* M. A. (California), Instructor in History.
R. C. Littler, A. B. (Stanford), Instructor in History.

Home Economics:

A. von B. Dahl, Assistant Professor of Textiles and Design.
C. D. Miller, M. S. (Columbia), Assistant Professor of Foods and Nutrition.

Languages:

I. O. Pecker, A. B. (Boston Univ.), Professor of Romance Languages.
S. C. Lee, M. A. (Columbia), Professor of Chinese Language and History.
T. Harada, D. D. (Amherst), LL.D. (Edinburgh), Professor of Japanese Language and History.
F. W. Beckley, Instructor in Hawaiian.
M. C. Waite, M. A. (Stanford), Instructor in Romance Languages.

Mathematics:
J. S. Donaghho, A. M. (Marietta), Professor of Mathematics and Astronomy.
R. L. T. Yap, M. A. (Hawaii), Instructor in Mathematics.

Physics:
Paul Kirkpatrick, Ph. D. (California), Professor of Physics.
M. C. Magarian, M. A. (Stanford), Instructor in Physics.

The Psychological Clinic:
S. D. Porteus, Director, and Professor of Clinical Psychology.
M. E. Babcock, A. B. (Wells), Assistant Psychologist.
Clinical testing and research in race psychology.

University Library:
C. F. Hemenway, Librarian.
M. P. Pringle, Associate Librarian.

The Waiakea Experiment Station:
Robert Pahau, B. S. (Hawaii), Superintendent.
Sugar Culture under homesteading conditions.

Experiment Station Association of Hawaiian Pineapple Canners:
A. L. Dean, Ph. D. (Yale), Director.

Agricultural Investigations:
H. L. Denison, B. S. (Hawaii), Agriculturist.
W. A. Wendt, B. S. (Wisconsin), Assistant Agriculturist.
F. A. Bowers, B. S. (Hawaii), Assistant Agriculturist.
W. A. Baldwin, Ph. B. (Yale), Agent for Maui.

Botanical and Pathological Investigations:
C. P. Sideris, Ph. D. (California), Pathologist.
G. H. Godfrey, Ph. D. (Wisconsin), Nematologist.
H. T. Morita, B. S. (Hawaii), Assistant Nematologist.
G. C. Waldron, B. S. (California), Assistant Pathologist.

Chemical Investigations:
F. T. Dillingham, M. A. (Yale), Chemist.
John Horner, A. B. (Stanford), Assistant Chemist.
F. A. E. Abel, M. S. (Hawaii), Assistant Chemist.
C. A. Farden, B. S. (Hawaii), Assistant Chemist.

Studies of methods of cultivation and fertilization, bud selection, breeding new varieties, crop rotation, diseases of the pineapple plant and fruit, cannery organisms, nematode root parasites, the physiology of the pineapple plant, soils, and fertilizer control.

THE PAN-PACIFIC RESEARCH INSTITUTION, HONOLULU.

FREDERICK A. G. MUIR, Chairman,
Pan-Pacific Science Council

The Pan-Pacific Research Institution was organized in the fall of 1925 with Dr. David Starr Jordan as president.

While the first active group of the Pan-Pacific Research Institution is located in Hawaii, it is expected that similar groups of research workers will be organized in each Pacific country as part of the Institution. The purpose of the Institution is to carry on active research work and to bring about closer relationship between all groups of research workers in the Pacific area. For the present the Institution will work primarily on the problems of food, health, and population in Pacific lands.

The following are the officers of the Pan-Pacific Research Institution:

Dr. Nils P. Larsen, Chairman, Medical Director of Queen's Hospital, Chairman Plant Constituent Council.

Prof. F. G. Krauss, Agronomist, University of Hawaii, Chairman Crop Production and Improvement Council.

Kilmer O. Moe, Agriculturist, Kamehameha Schools, Chairman Race and Population Study Council.

Dr. C. B. Cooper, ex-President Board of Health, Territory of Hawaii, Chairman Health and Sanitation Council.

Willis T. Pope, Horticulturist, U. S. Agricultural Experiment Station, Chairman Pan-Pacific Botanic Gardens Council.

Prof. L. A. Henke, Animal Husbandry, University of Hawaii, Chairman Animal Husbandry Council.

E. A. Beals, Meteorologist, U. S. Weather Bureau, Chairman Meteorology and Topography Council.

Col. F. M. Brown, Department Judge Advocate, U. S. Army, Chairman Legislative Council.

Prof. J. F. Illingworth, Entomologist, Bishop Museum, Chairman Entomologist Council.

Wm. Weinrich, Jr., Recording Secretary.

H. Atherton Lee, Plant Pathologist, Hawaiian Sugar Planters' Experiment Station, Chairman Board of Publications.

Frederick A. G. Muir, Entomologist, Hawaiian Sugar Planters' Experiment Station, Chairman Pan-Pacific Science Council.

Director General of Pan-Pacific Research Institution.

Honorary President of Pan-Pacific Research Institution.

Director of the Pan-Pacific Union as liaison officer and temporary corresponding secretary.

The Institution issues a quarterly Journal with the following staff of editors:

F. G. Krauss, Editor, University of Hawaii.

Associate Editors:

Carl L. Alsberg, Stanford University.

Charles F. Baker, University of the Philippines.

Sir James Barrett, K. B. E., Melbourne, Australia.

P. J. S. Cramer, General Agricultural Experiment Station of Java.

C. Ishikawa, Professor Emeritus, Tokyo Imperial University.

Elmer D. Merrill, University of California.

Christos Plutarch Sideris, University of Hawaii.

Hon. George M. Thomson, M. P., Wellington, New Zealand.

S. T. Wen, Shanghai, Delegate to Washington Conference, 1922.

R. H. Van Zwaluwenburg, Experiment Station, H. S. P. A.

At the first meeting of the Board of Governors under the direction of Dr. David Starr Jordan the following outline of the work was unanimously decided upon:

a. For the present the Institution will concern itself primarily with problems of food production, distribution, consumption, and conservation, with problems of public health, and with the problems of race and population as related to the Pacific countries. Particular stress will be placed upon the bringing about of international agreements or treaties needed for the development, proper utilization, and conservation of the natural animal and plant resources of the Pacific and of all lands within the sphere of interest of the Pan-Pacific Union.

b. The Institution favors the plan of the Pan-Pacific Union to establish on the grounds adjoining those used by the Institution an endowed dormitory or building where young men interested in science will be given an opportunity to live and earn their way by giving part time when desired as helpers to scientists engaged in research work for the Institution. Among these might be both skilled and unskilled helpers.

Among the problems and activities which the Institution might properly take up at once, the following are recommended:

1. The preparation of card indexes of:
(a) *Islands in the Pacific*—location, area, characteristics, principal natural products, population, etc.
(b) *Races, tribes and languages* of the Pacific.
(c) *Natural Resources* of the Pacific.
(1) *Land*—as plants, mammals, birds, reptiles, economic insects, etc.
(2) *Aquatic*—as fishes, mammals, birds, reptiles, mollusks, crustaceans, other invertebrates, plants, etc.

Dr. David Starr Jordan has taken the chairmanship of the committee on Aquatic Resources. Already this committee has published a check-list of the fish of the Hawaiian Islands and is preparing check-lists of the fish of other Pacific countries. This committee or council has conducted one Pacific Fisheries Conference and is preparing for another. It is making a study of the aquatic resources of the Pacific, especially of those that are of economic use to man, and is urging the protection, propagation and conservation of the edible crustacean and food fish of the Pacific as a basis of a world food supply. The following is the personnel of the Aquatic Resources Council, Hawaiian Division:

1. David Starr Jordan, Chairman.
2. G. K. Larrison, Assistant Engineer, Honolulu Sewer and Water Commission.
3. H. L. Kelley, Fish and Game Commissioner.
4. J. M. Ostergaard, Honolulu Aquarium.
5. L. A. Thurston.
6. Theodore Dranga, Conchologist, Bishop Museum.
7. F. A. Potter, Superintendent, Honolulu Aquarium.
8. Eben Low.
9. Charles Chillingworth.
10. Howard Laws, Member of Fish and Game Commission of Hawaii.
11. C. S. Akana, Manager of commercial fish ponds.
12. Matsutaro Yamashiro, Manager, Pacific Fishing Co.

Dr. Nils P. Larsen, Medical Director of the Queen's Hospital, is Chairman of the Plant Constituent Council, and already this council has secured able assistance and has done excellent research work in discovering the constituents of the poisons in certain fish, the eating of which at certain seasons of the year is fatal to mankind. It has also done con-

siderable work in the study of the constituents of the pulp of the young coconut, demonstrating that this vegetable food contains the constituents of mother's milk and can be used as such, a fact known to the Polynesians for many centuries. The personnel of the Plant Constituent Council, Hawaiian Division, is as follows:

1. Nils P. Larsen, Medical Director, Queen's Hospital, Chairman.
2. W. E. Smith, Chemist, McKinley High School.
3. C. E. Warriner, Chemist, Libby, McNeill & Libby.
4. Miss L. Larrabee, Chemist, McKinley High School.
5. Miss Carey B. Miller, Chemist, University of Hawaii.
6. G. R. Stewart, Chemist, Hawaiian Sugar Planters' Association.
7. Maxwell Johnson, Chemist, Hawaiian Sugar Planters' Association.
8. John C. Ripperton, Chemist, U. S. Agricultural Experiment Station.
9. Frank Dillingham, Chemist, University of Hawaii.
10. Dr. A. R. Davis, Division of Plant Nutrition, University of California.
11. W. H. Duker, Chemist, T. H. Davies & Co., Ltd.
12. William Weinrich, Agriculturist.

The Crop Development Council is under the chairmanship of Professor F. G. Krauss, agriculturist at the University of Hawaii. The work it has outlined is as follows:

To map the principal crop producing areas of the Pacific region, and inventory their agricultural products; to determine the relation between production and consumption in each country; to forecast the probable future demands and thereby assist in regulating production and distribution; to catalogue crop varieties and encourage exchange of seed; to disseminate knowledge concerning culture methods; to standardize grades. In a word, to act as a general clearance house in all things agricultural concerning more especially the Pacific area. For greater detail of the work outlined by this Council, see resolutions passed by the First Pan-Pacific Food Conservation Conference.

The personnel of the Crop Development Council, Hawaiian Division, is as follows:

1. Prof. F. G. Krauss, Chairman, Agriculturist, University of Hawaii.
2. J. M. Westgate, Director, U. S. Agricultural Experiment Station.
3. H. L. Chung, Agronomist, U. S. Agricultural Experiment Station.
4. C. Ligot, Agriculturist and Filipino Commissioner to Hawaii.
5. Y. Kutsunai, Agriculturist, Hawaiian Sugar Planters Association.
6. Wm. P. Alexander, Agriculturist, Ewa Plantation.
7. W. J. Hartung, Agriculturist, Chemist, Pacific Guano and Fertilizer Co.
8. H. L. Denison, Supt. Pineapple Experiment Station.
9. J. A. Verret, Agriculturist, Hawaiian Sugar Planters Association.
10. T. C. Zschokke, Assistant Forester, Territorial Board of Agriculture and Forestry.
11. R. J. Borden, Agriculturist, Normal Schools.
12. R. H. Van Zwaluwenburg, Assistant Entomologist, Hawaiian Sugar Planters Association.

Kilmer O. Moe, agriculturist at the Kamehameha Schools, is Chairman of the Race and Population Study Council. His helpers are at work and a study is being made by them of races of the Pacific as they are affected by the food they eat, food shortage and its effect on population and migration. A study of potential food production in each Pacific area is contemplated, with regard to the probable limitation of population. The personnel of the Race and Population Council, Hawaiian Division, is as follows:

1. Kilmer O. Moe, Agriculturist, Kamehameha Schools, Chairman.
2. J. F. G. Stokes, Ethnologist, Bishop Museum.
3. Dr. S. D. Porteus, University of Hawaii.
4. R. T. Aitken, Ethnologist.
5. Dr. Romanzo Adams, Economist, University of Hawaii.
6. Prof. Robert Littler, University of Hawai.
7. Dr. Henry Butler Schwartz, Director, Language Schools, Hawaii.
8. Dr. K. C. Leebrick, Professor of History, University of Hawaii.
9. Dr. T. Harada, Professor of Japanese, University of Hawaii.

10. Rev. Philip Allen Swartz, Student Far Eastern Races.
11. Dr. John Hedley, Student Far Eastern Races.
12. John C. Lane, Ex-Mayor Honolulu, Polynesian Student.

Dr. C. B. Cooper, Ex-President of the Board of Health, is Chairman of the Health and Sanitation Council. This committee has had several excellent lectures by internationally known medical men at the Institution, and will shape its research work along the line of study of contagious diseases in the Pacific area and the need of international examinations at ports of departure as well as an investigation of a possible plan of uniform quarantine laws in the Pan-Pacific area. This committee is assisting in the plan for holding a Pan-Pacific Medical Conference in Hawaii in 1929 or earlier. The personnel of the Health and Sanitation Council in Hawaii is as follows:

1. Dr. C. B. Cooper, Chairman.
2. Dr. F. E. Trotter, President, Board of Health.
3. Dr. Dai Yen Chang.
4. Dr. I. Katsuki.
5. Dr. J. Warren White, Head of Shriners' Hospital.
6. Dr. A. N. Sinclair.
7. Dr. W. K. Chang.
8. Dr. C. F. Reppun.
9. Dr. Y. C. Yang.
10. Dr. I. Mori.
11. Dr. M. H. Neill, Kalihi Hospital.
12. Dr. H. Wood, Waialua Plantation.

Mr. Willis T. Pope, Horticulturist at the U. S. Agricultural Experiment Station, heads the Pan-Pacific Botanic Garden Council. This council has taken in hand a plan of creating in Hawaii a Pan-Pacific Botanic Garden, especially of economic plants. It will utilize sections in different parts of the islands from sea level up to an elevation of more than 12,000 feet, hoping to secure in time a collection of the useful and economic plants of the Pacific. This council will cooperate with the Plant Constituent Council, the workers of which will have the use of the trees and shrubs brought to Hawaii from Pacific lands. The personnel of the Pan-Pacific Botanic Garden Council is as follows:

1. Willis T. Pope, Horticulturist, U. S. Agricultural Experiment Station, Chairman.
2. C. S. Judd, Director, Territorial Board of Agriculture and Forestry.
3. Prof. F. C. Newcombe, Botanist, Pres. Hawaiian Academy of Science.
4. Forrest B. Brown, Botanist, Bishop Museum.
5. E. M. Ehrhorn, Director, Plant Quarantine Station.
6. Solomon Kekipi, Hawaiian Botanist.
7. David Haughs, Nurseryman, Territorial Board of Agriculture and Forestry.
8. W. O. Smith, Hawaiian Sugar Planters' Association.
9. J. M. Westgate, Director, U. S. Agricultural Experiment Station.
10. Dr. Wm. D. Baldwin, Horticulturist, Maui.
11. Gerrit P. Wilder, Botanist, Bishop Museum.
12. Wilbur J. McNeil, Chemist and General Scientist, Oahu College.

Professor L. A. Henke, Prof. of Agriculture at the University of Hawaii, is Chairman of the Animal Husbandry Council. This council is expected to take up research work in the diseases of animals common to the Pacific area and matters of animal quarantine and the suitability of animals of economic value to the different countries of the Pacific. The personnel of the Animal Husbandry Council in Hawaii is as follows:

1. L. A. Henke, Prof. of Agriculture, University of Hawaii, Chairman.
2. Dr. P. H. Browning, Territorial Veterinarian.
3. Walter E. Wall, Territorial Surveyor.
4. Dr. L. E. Case, Assistant Territorial Veterinarian.
5. Dr. T. Katsunuma, Veterinary Surgeon.
6. Capt. Charles M. Cowherd, Army Veterinarian, Fort Armstrong.
7. Ronald Von Holt, Manager, Oahu Railway and Land Co. Ranch.
8. H. K. L. Castle, Manager and owner, Kaneohe Ranch.
9. R. J. Borden, Agriculturist, Territorial Normal School.
10. J. Otis Dale, Instructor in Poultry Husbandry, University of Hawaii.
11. Raymond C. Brown, Secretary Territory of Hawaii.
12. C. M. Schoening, C. M. Cooke Estate.

Mr. E. A. Beals, Meteorologist, U. S. Weather Bureau, is Chairman of the Meteorological and Topographical Council. This council is making a study of

the effects of climate on food production in the Pacific and of the changes of climates in certain areas. It is also forwarding the plan for a general topographical and hydrographical survey in the entire Pan-Pacific area. The personnel of the Meteorological and Topographical Council in Hawaii is as follows:

1. E. A. Beals, Meteorologist, U. S. Weather Bureau, Chairman.
2. Dr. T. A. Jaggar, Jr., Director, Kilauea Volcano Observatory.
3. Albert O. Burkland, Topographic Engineer, in charge, U. S. Geological Survey.
4. Max H. Carson, Dist. Engineer, U. S. Geological Survey.
5. Captain Clem L. Garner, Commanding Officer, U. S. C. & G. S. S. Discoverer.
6. Prof. John Donaghho, Astronomer, University of Hawaii.
7. E. S. Wheeler, Senior Highway Engineer, U. S. Bureau of Public Roads.
8. Harold E. McComb, Ewa U. S. Magnetic Observatory, Ewa.
9. Lt. A. F. Hegenberger, First Lieutenant, Air Service, U. S. Army.
10. Thomas Boles, Superintendent, Hawaii National Park.
11. Lt. Com. Ralph Risley, Hydrographic Information Office, U. S. Navy.
12. Mayor John H. Wilson, Engineer and Mayor of Honolulu.

Colonel Frederick Melvin Brown, now at the Plebiscitary Commission, Arica, Chile, has been Chairman of the Legislative Council. This Council is acting as advisory committee for a Pan-Pacific Legal Conference to be held in Honolulu. It has given material assistance to the Pan-Pacific Fisheries Conference in the matter of putting its resolutions in legal form and verbiage. It holds itself in readiness to cooperate in this way with the different committees of the Pan-Pacific Research Institution. The personnel of the Legislative Council, Hawaiian Division, is as follows:

1. Col. F. M. Brown, Chairman.
2. Judge Sanford B. Dole, Ex-President Republic of Hawaii.
3. Judge Walter F. Frear, Ex-Governor of Hawaii.
4. Judge S. C. Huber, Attorney-at-Law.
5. Miss Carrick Buck, Deputy City and County Attorney.
6. Judge Wm. H. Heen, Attorney-at-Law.
7. W. C. Tsukiyama, Attorney-at-Law.
8. W. W. Thayer, Attorney-at-Law.
9. E. A. Mott-Smith, Attorney-at-Law.
10. Hoon Wo Wong, Attorney-at-Law.
11. Judge Frank Andrade, First Judge of First Circuit Court.
12. Gabriel Gambsky, Attorney-at-Law.

J. F. Illingworth, Research Associate in Entomology at the Bishop Museum, is Chairman of the Entomological Council, with Frederick Muir, Chairman of the Pan-Pacific Science Council, as chairman of a committee on calling a Pan-Pacific Entomological Conference at an early date in Honolulu, to be guests of the Pan-Pacific Research Institution. The Entomological Council is planning the publication of lists of economic insects and parasites in the Pan-Pacific area. The following is the personnel of the Entomological Council, Hawaiian Division:

1. J. F. Illingworth, Research Associate in Entomology, Bishop Museum.
2. Frederick Muir, Entomologist, Hawaiian Sugar Planters' Experiment Station.
3. E. H. Bryan, Entomologist, Bishop Museum.
4. Otto H. Swezey, Entomologist, Hawaiian Sugar Planters' Experiment Station.
5. Walter M. Giffard, Entomologist, retired.
6. D. L. Crawford, Prof. of Entomology, University of Hawaii.
7. H. F. Willard, Entomologist, U. S. Bureau of Entomology, Honolulu.
8. E. M. Ehrhorn, Chief Plant Inspector, Board of Agriculture and Forestry.
9. David L. Fullaway, Entomologist, Board of Agriculture and Forestry.
10. F. X. Williams, Assistant Entomologist, Hawaiian Sugar Planters' Experiment Station.
11. R. H. Van Zwaluwenburg, Assistant Entomologist, Hawaiian Sugar Planters' Experiment Station.
12. F. C. Hadden, Assistant Entomologist, Hawaiian Sugar Planters' Experiment Station.

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Correspondence from actual research workers throughout the Pacific area is urgently invited. Inquiries may be addressed to the Pan-Pacific Research Institution, Honolulu, Hawaii.